

SUBJECT CODE	SUBJECT NAME	PERIOD PER WEEK		CREDIT
26443	CIVIL CAD-1	T	P	C
		1	3	2

Rationale	CAD is computer-aided design software. It allows users to create and edit digital 2D and 3D designs faster and more readily than hand. AutoCAD is a design tool which will reduce the human efforts compared manual drafting. The data can also be saved and kept in the cloud, making them accessible from anywhere at any time. CAD is a software application that is used to create drafting solutions. CAD is available in mobile, cloud-based, and web-based versions. Civil diploma Students must create drawing appropriately in their Civil Engineering projects, outlining every facet of the same. As a result, Civil Engineering students can utilize this CAD program to create simple and effective drawing for their Civil Engineering projects.
Learning Outcome (Theoretical)	After undergoing the subject, students will be able to - Describe fundamental of CAD commands - Mention Functions and Uses of CAD Commands - Mention different Features of a Building. - Draw Plan, Section, Elevation of a Residential Building Preparing Procedure by CAD. - Explain Layout Plan and Sectional Elevation of an Underground Water Reservoir, Septic Tank, Truss and Plot the drawing. - State Increases Productivity, Improves Accuracy, Decreases Errors, Better Quality, Quick Sharing for Collaboration and save time.
Learning Outcome (Practical)	After undergoing the subject, students will be able to - Demonstrate CAD commands - Practice Auto CAD commands - Perform Plan, Section, Elevation of a Residential Building by CAD. - Perform Plan and Sectional Elevation of an Underground Water Reservoir, Septic Tank and Truss.

DETAILED SYLLABUS (THEORY) :

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	FUNDAMENTAL OF CAD 1.1 Define Computer Aided Design (CAD). 1.2 State start and exit procedure of CAD. 1.3 List different tools used in CAD. 1.4 State WCS icon and UCS icon of CAD. 1.5 Describe the classifications of co-ordinate system. 1.6 Mention the necessity of drawing units and limits.	2	2
2	FUNCTIONS AND USES OF CAD COMMANDS 2.1 State the drawing process of line, poly line, rectangle, triangles, polygons, circles and arcs. 2.2 Mention the functions of copy, move, offset, trim, fillet, array, chamfer, extend, break, rotate, stretch, mirror, change, scale and edit command. 2.3 Mention the functions block, insert, explode, divide command. 2.4 Mention the functions of distance, area, Id, list command. 2.5 Mention the functions of layout, view port, model space, paper space command. 2.6 Mention the functions of dimension style, leader, linear, radius & diameter, aligned, continue and base dimension command. 2.7 Mention the functions of donut, solid, trace, p line, x line, ray, fill, hatch and text command. 2.8 Mention the functions of zoom, pan, undo, redo, save, command. 2.9 Define Layer, Layer on/off and formation of Layer. 2.10 Mention the advantages of Layers in drawing using CAD.	4	8
3	FEATURES OF A BUILDING 3.1 Define single and multistoried building. 3.2 Define site and lay-out Plan. 3.2 Differentiate between site plan and lay-out plan. 3.3 Mention the types of building 3.4 Describe Setback rules and FAR 3.5 Describe the main features of residential building. 3.6 Describe the different component of a building. 3.7 Describe the procedure of drawing for a one unit residential building.	2	4
4	PLAN, SECTION, ELEVATION OF A RESIDENTIAL BUILDING PREPARING PROCEDURE BY CAD 4.1 Describe the procedure of drawing site plan and layout plan of a Single storied building. 4.2 Describe the procedure of drawing floor plan, elevation and sectional elevation of a residential building. 4.3 Describe the procedure of drawing plan of square and rectangular column with footing showing reinforcement. 4.4 Describe the procedure of making detailed drawing of RCC	4	7

	lintel with sunshade showing reinforcement. 4.5 Describe the procedure of making detailed drawing of Furniture lay-out plan. 4.6 Describe the setting procedure of plumbing fixture for toilet. 4.7 Describe the setting procedure of component for kitchen. 4.8 Describe the setting procedure of electrical layout diagram. 4.9 List the drawings of a residential building necessary for approval of the relevant authorities.		
5	A PLAN AND SECTIONAL ELEVATION OF A SEPTIC TANK, UNDERGROUND WATER RESERVOIR AND TRUSS 5.1 Describe the procedure of plan and sectional elevation of a septic tank. 5.2 Describe the procedure of plan and section of soak pit and inspection pit. 5.3 Describe the procedure of plan and sectional elevation of an underground water reservoir showing the reinforcement. 5.4 Describe the procedure of detail drawing of a water closet including trap. 5.5 Draw an elevation of King post and Queen post wooden truss with showing different components. 5.6 Draw an elevation of steel truss with showing different components.	3	6
6	LAYOUT AND PLOT THE DRAWING 6.1 Define layout for plot/print using paper space and model space. 6.2 State the scale & assign pen (if necessary) for plot/print. 6.3 Describe the paper & plotter for plotting/printing. 6.4 Describe the process of Plot/Print the drawing. 6.5 Discuss about various drawing in different scale in a paper through layout. 6.6 Describe the process of drawing in PDF format.	1	3
	Total	16	30

DETAILED SYLLABUS (PRACTICAL)

Sl.	Experiment Name	Class (3 Period)	Marks (Continuous)
1.	PREPARE PAGE LAYOUT USING CAD. 1.1 Open CAD 1.2 Create CAD new file 1.3 Set up the units and dimension style 1.4 Set up the drawing limits. 1.5 Set zoom all 1.6 Exit from CAD	1	2
2	PERFORM DRAW AND SAVE DRAWING USING CAD. 2.1 Draw a line using CAD.		

	2.2 Draw different types of rectangles using CAD. 2.3 Draw circles, arcs using CAD. 2.4 Draw triangles using CAD. 2.5 Draw different types of polygons using CAD. 2.6 Save the drawing.	1	2
3	EDIT THE EXISTING DRAWING USING CAD. 3.1 Erase a line or object. 3.2 Perform pan, undo and redo commands. 3.3 Apply different types of Zoom commands. 3.4 Perform Cut, Trim and extend commands. 3.6 Apply move and copy commands. 3.7 Perform the uses of the following commands: offset, rotate, stretch, array, mirror, scale, P edit and explode, block, fillet, chamfer.	2	3
4.	PERFORM DIMENSION OF DRAWING USING CAD. 4.1 Perform dimensioning. 4.2 Perform linear dimensions in the drawing. 4.3 Perform aligned dimensions in the drawing. 4.4 Use radius dimensions in the drawing. 4.5 Use angular dimensions in the drawing. 4.6 Use modify dimension style in the drawing.	1	2
5	LAYERS, TEXT AND HATCHES THE DRAWING USING CAD. 5.1 Create different layers for line, dimension, text, hatches, etc. 5.2 Select different colors for different layers. 5.3 Select the type and scale of the hatch for a drawing. 5.4 Select the type and size of the text for a drawing. 5.5 Insert text in the drawing.	1	3
6	SET THE LAYOUT AND PLOT THE DRAWING. 6.1 Create layout for plot/print using paper space and model space. 6.2 Set up the scale & assign pen (if necessary) for plot/print. 6.3 Select the paper & plotter for plotting/printing. 6.4 Set various drawing in different scale in a paper through layout. 6.5 Plot/Print the drawing. 6.6 Save the drawing in PDF format.	2	3
7	PERFORM A PLAN, SECTION AND ELEVATION OF A RESIDENTIAL BUILDING BY CAD. 7.1 Create a plan of a residential building with setback rules or FAR 7.2 Draw an elevation of a residential building. 7.3 Draw a sectional elevation of a residential building. 7.4 Set a furniture layout plan for a residential building.	2	3
8	PERFORM A PLAN, SECTION AND ELEVATION OF A RESIDENTIAL BUILDING BY CAD.	3	3

	8.1 Create a column footing working drawing showing reinforcement. 8.2 Create lintel with sun shed working drawing showing reinforcement. 8.3 Create a Plumbing plan for a toilet and kitchen. 8.4 Create a Electrical layout Plan.		
9	PERFORM UNDERGROUND WATER RESERVOIR BY CAD. 9.1 Create a plan and sectional elevation of an underground water reservoir. 9.2 Create a Section of underground water reservoir showing the reinforcement. 9.3 Draw the pipe line diagram for UGW.	2	2
10	PERFORM SEPTIC TANK BY CAD. 10.1 Create a plan for Septic tank. 10.2 Create a sectional elevation of a septic tank. 10.3 Draw the plan and section of soak pit and inspection pit.	1	2
	Total	16	25

NECESSARY RESOURCES (TOOLS, EQUIPMENT'S AND MACHINERY):

SI	Item Name	Quantity
01	Desktop Computer	26 Set
02	Multimedia Projector	2 nos
03	Projector screen	2 nos
04	Smart Board	1 nos
05	Air Condition (Two Ton Capacity)	2 nos
06	Sound System	2 nos

RECOMMENDED BOOKS:

SI	Book Name	Writer Name	Publisher Name & Edition
01.	Civil Engineering Drawing	Guru Charan Singh	
02.	AutoCAD	Engr. Md. Shah Alam	
03.	Mastering AutoCAD	Engr. Samuel Mallik	
04.	Mastering AutoCAD	George Omura	
05.	Structural Detailing	Peter H Newton	

WEB SITE REFERENCES:

SI	Web Link	Remarks
01	Link https://youtu.be/tNATCAHSgzY Link https://youtu.be/S99bWdvOd4o Link https://youtu.be/9d9oRoZXxJk	
02	Link https://youtu.be/fri2NEKrorw	
03	https://youtu.be/zrpWYucKEQU	
04	https://youtu.be/6BASEeZ83wE	